USER'S MANUAL

TUBE SEALER

Model SE700

No. CAT.SE70011Ce

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Important Note

1. Safety:

The machine generates strong high-frequency power when the trigger lever is pulled. Users should be cautious of potential electric shock during sealing process.

- To avoid potential electric shock, always use the machine with the head protector mounted on sealing head.
- The machine works even without the head protector mounted on sealing head. If you should use the machine without the head protector with any reason, never touch any metal part at sealing head while you are pulling the trigger lever. Finger may scald instantaneously due to generated high-frequency power if touched at any metal part in sealing head while the trigger lever is being pulled or the red SEAL lamp is lit.

2. Battery Recharging and Replacement:

- Recharge the battery prior to the first use. For stable operation, recharge it when two or more indication lamps are on. Full charging may take 6 hours.
- The machine does not work during recharging. The charger unit should be removed from charging jack in order that the machine can work. Refer to the Section 4-2.
- Replace the battery pack with a new pack when it seems the battery pack may have been degraded too much. Refer to the Section 4-2 and 5-3 for details.

3. Cleaning and Maintenance:

- Always keep the sealing head clean and dry. If the sealing head is wet or dirty, arc may appear. When it's wet, clean it with a dry soft cloth or a tissue paper.
- Use a soft cloth and mild detergent to clean the units. After cleaning, wait a few minutes until the area cleaned is completely dry. Do not use paint thinner, benzene or strong detergent. Refer to the Section 5-2.
- Be sure to turn the power switch off before cleaning the machine.
- Only authorized service personnel should remove the covers of the main unit and the hand unit.
- Avoid pulling the trigger lever without tubing loaded in sealing head. It consumes large amount of battery charge and may mar the sealing head
- Never put sharp objects or metal objects in sealing head as damage can occur.
- Avoid using or leaving the machine in a location where temperature is over 40 °C or 104 °F. Keep it away from any heating source or direct sunlight.

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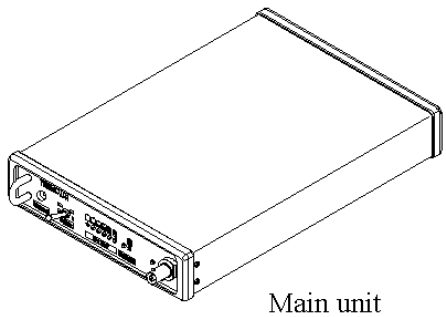
1. Features

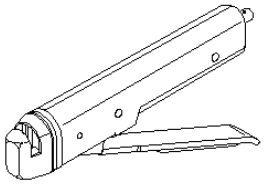
The tube sealer model SE700 is a lightweight portable machine with a hand unit. The machine is powered by a rechargeable battery pack. When the trigger lever is pulled, the machine generates strong high-frequency power to melt thermoplastic tubing. It makes seals on tubing in 1-2 seconds.

Indication lamps on the front panel indicate available battery charge and charging status. For stable and continuous operation, it is recommended that the battery pack should be recharged when two or more indication lamps are lighting. Recharging to full capacity may take 6 hours.

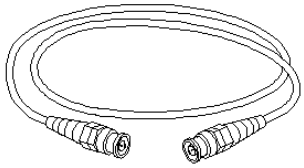
Units and accessories are stored in the carrying bag during transportation and storage. The figures below show configuration of the tube sealer SE700.



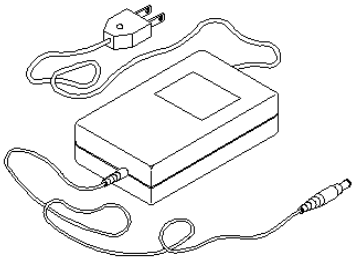
Main unit



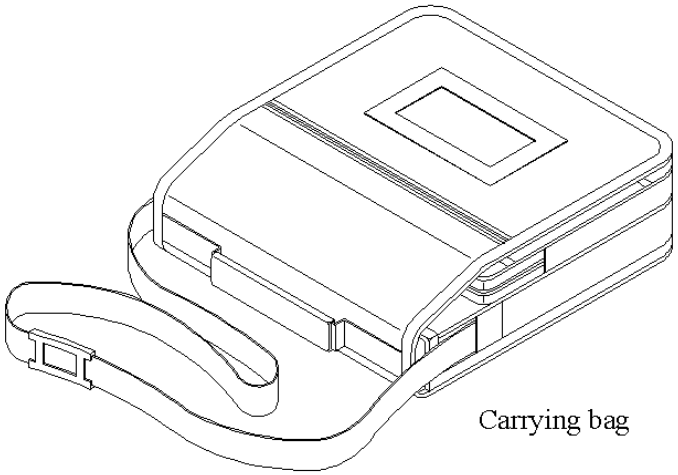
Hand unit



RF cable



Charger unit



Carrying bag

2. Specifications

a. Physical specification:

(1) Main unit:	dimension (WxHxD) - 148x34x252 mm (5.8"x1.4"x9.9")
	weight - 1700 gram (3.8 lb)
(2) Hand unit:	dimension (WxHxD) - 28x44x204 mm (1.1"x1.8"x8.1")
	weight - 220 gram (0.5 lb)
(3) Charger unit:	weight - 300 gram (0.7 lb)
(4) RF cable:	length - 1.8 m (6 feet), weight - 100 gram (0.2 lb), cord - RG-58
(5) Carrying bag:	dimension (WxHxD) - 220x90x275 mm (8.7"x3.5"x10.9")
	weight - 300 gram (0.7 lb)
	type - material: black canvas, with shoulder strap

b. Power source:

(1) Battery pack:	12V/4.5AH, Ni-MH cell, rechargeable and replaceable
(2) Charger unit:	Input - 100-120/220-240 VAC, 50/60 Hz, 25 watt
	Output - 18 VDC, 1 ampere

c. Features:

(1) Tubing size to seal:	6 mm (1/4") diameter max.
(2) RF frequency:	40.68 MHz
(3) Output RF power:	effective level - 30 watts
(4) Sealing time:	1-2 seconds
(5) Battery Charging:	full charging in 6 hours
(6) Indication lamps:	charge level - BATTERY (5 green LED)
	charging status - CHARGING (1 yellow LED)
	sealing status - SEAL (1 red LED)
	on sealing unit - SEALING (1 amber neon in head)

d. Environmental Conditions:

The machine should be operated within the following environmental conditions.

(1) Indoor use only

(2) Altitude up to 2,000 meters

(3) Operating temperature: 5 - 40 °C (41 - 104 °F)
Storage temperature: -20 - 70 °C (-4 - 158 °F)

(4) Maximum relative humidity 80 % for temperature up to 31 °C,
decreasing linearly to 50 % relative humidity at 40 °C

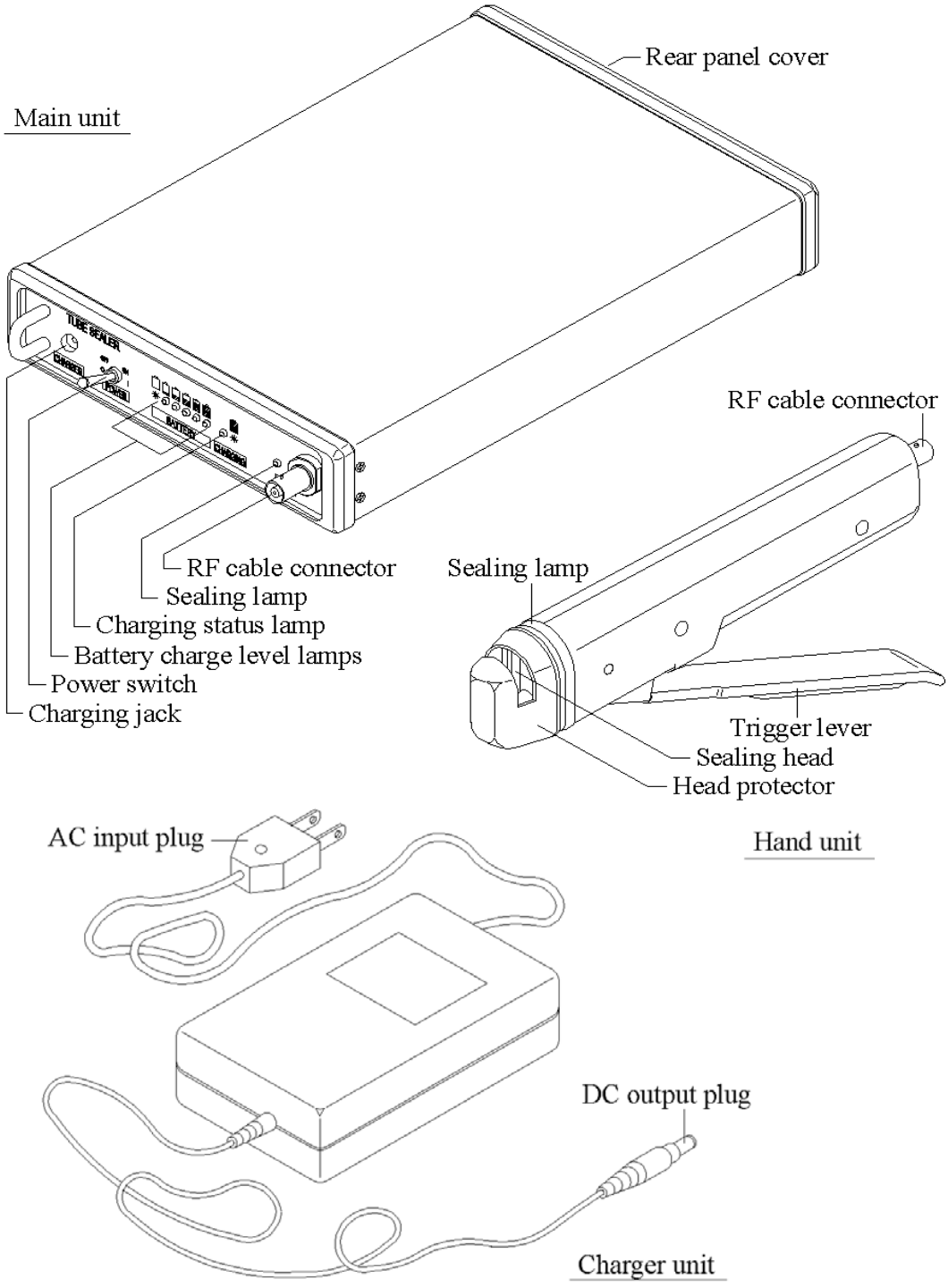
(5) Mains supply voltage fluctuations up to +/- 10 % of the nominal voltage

(6) Transient overvoltages typically present on the mains supply
Note: The nominal level of transient voltages is impulse withstand (overvoltage) category II of IEC 60364-4-443.

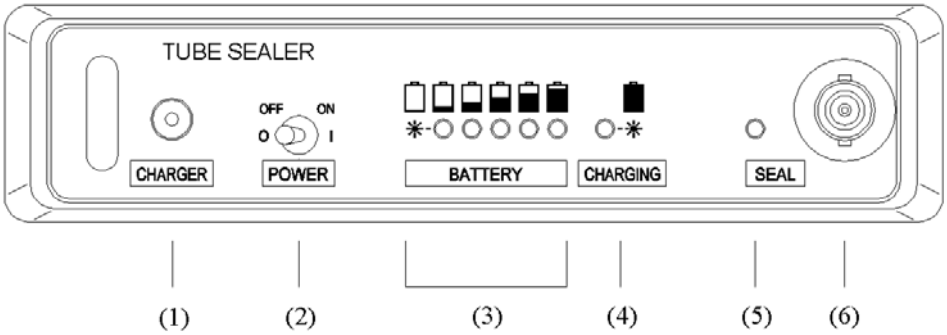
(7) Applicable rated pollution degree: Pollution Degree 1

3. Appearance

3-1. Units



3-2. Front panel of main unit



(1) Charging jack (CHARGER): It takes 18 volts DC from the charger unit.

(2) Power switch (POWER): It turns power on and off. Pull the lever to flip.

(3) Battery charge level lamps (BATTERY): The five green LED lamps indicate battery charge level stored in the battery pack inside. Each lamp denotes about 20 % of full charge capacity of the battery.
- The first left lamp flashes when charge level is 0 - 10 %.
- The first left lamp is turned on when charge level is 10 - 20 %.
- The second lamp is turned on when charge level is 20 - 40 %.
- The third lamp is turned on when charge level is 40 - 60 %.
- The fourth lamp is turned on when charge level is 60 - 80 %.
- The fifth lamp is turned on when charge level is 80 - 100 %.

(4) Charging status lamp (CHARGING): The yellow LED lamp is turned on when the charger unit plug is plugged into the charging jack. The lamp flashes when charge level reaches to full charge.

(5) Sealing lamp (SEAL): The red LED lamp indicates RF power is being generated and applied to the hand unit. The lamp is turned on by pulling the trigger level, and is turned off automatically when a seal is made at tubing, or in 3 seconds after.

(6) RF cable connector: Connect the RF cable between this connector and the same connector on the hand unit.

4. Operating Procedures

4-1. Sealing Tubing

(1) Connect the RF cable between main unit and hand unit.
(2) Turn the power switch on. Check that battery charge level is good for working. Recharge it if charge level is not sufficient.
** For stable and continuous operation, it is recommended that the battery pack should be recharged when two or more indication lamps remain lit.*
(3) Place tubing in sealing head.
(4) Pull the trigger lever. Watch that amber light turns on at sealing head.
(5) After amber light turns off, wait for a while (approximately one second or more), and then release the lever.
(6) Remove tubing and inspect it.

4-2. Recharging the Battery

When to recharge the battery

The BATTERY lamps indicate battery charge level stored in the battery pack. Each lamp denotes about 20 % of full charge capacity. Refer to the Section 3-2.
For the best operation, recharge the battery pack when two or more indication lamps remain lit. The machine does not work during recharging. The charger unit should be removed from charging jack in order that the machine can work.

Recharging procedure

(1) Plug the charger unit plug into the charging jack on the front panel of main unit. The CHARGING lamp turns on. As time goes on, more BATTERY lamps turn on.
** The power switch can be set at either* ON *or* OFF *position during recharging.*
** The* CHARGING *lamp may flash slowly for a while if recharging procedure starts when only the first lamp is on or the machine has been stored at a cold place.*
(2) When charge level reaches to full charge, the CHARGING lamp flashes rapidly. Remove the charger unit plug when the CHARGING lamp flashes.
** Recharging may take up to 6 hours. The first recharging may take longer.*
** Battery will not be overcharged or damaged even if left for longer time.*

Note: An independent charger unit BC167 is available, that charges 6 machines same time. Contact your distributor for information on BC167 charger unit.

When to replace the battery

Battery packs are consumables. Available battery capacity decreases gradually with time. Battery pack should be replaced with a new pack after the machine has been used for some period. Battery manufacturers usually guarantee cells for 3 to 6 months only, but some field service reports show that it can go for a year or more, sometimes up to three years. Replace the battery pack if any of the following case happens:

(1) If no BATTERY lamp illuminates when the power switch is turned on, recharge it once. If no lamp is still turned on, the battery pack may have been damaged, or the machine may have some trouble. Either replace the battery pack and try again, or ask service.
(2) If the number of seals made with one cycle of full charging is significantly reduced, e.g. below half of the number with a new battery pack, the battery pack may have been degraded too much. Replace the battery with a new pack. Contact your distributor for spare packs.

Refer to Section 5-3 for more information on battery replacement.

How to replace the battery pack

Refer to Section 5-3.

5. Maintenance

5-1. Troubleshooting

The following table covers common problems and suggested solution. Other problems should be corrected by authorized service personnel.

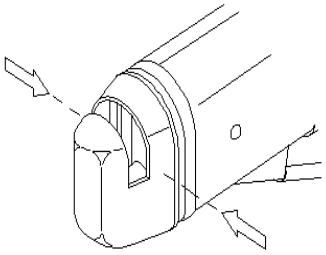
Symptom	Likely Cause	Solution
Switch is on, but no lamp illuminates.	Battery is exhausted or may be damaged.	Recharge the battery. Refer to Section 4-2 and 5-3.
	Equipment malfunction	Ask for repair service. Refer to Section 5-4.
Sealing is poor.	Low battery charge level	Recharge the battery. Refer to Section 4-2 and 5-3.
Sealed shape is bad.	Dirty clamp or sealing head	Clean sealing head and clamp area. Refer to Section 5-2.
Sealing clamp doesn't move smooth.	Dirty clamp or sealing head	Clean sealing head and clamp area. Refer to Section 5-2.
Arc appears.	Wet or dirty sealing head	Clean sealing head, dry thoroughly. Refer to Section 5-2.
Number of seals per full battery charge is significantly reduced.	Battery may be damaged or be degraded too much with long use.	Replace the battery pack. Refer to Section 4-2 and 5-3.

5-2. Cleaning

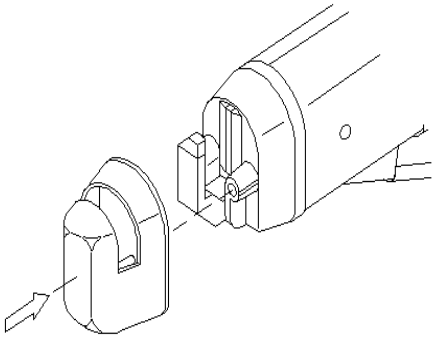
The sealing head and clamp can easily be stained by dust or liquid. Frequent cleaning will offer you the best long-term results.
For proper cleaning, use a dry cloth or a cloth dampened with water. A mild detergent may be used. Thoroughly dry the sealing head area before applying power. If the sealing head is wet when RF energy is applied, an arc may appear.
Follow the decontamination procedure of your facility as necessary.
Avoid spraying liquids in the sealing clamp or sealing head area.

<u>How to take off and put on the head protector</u>

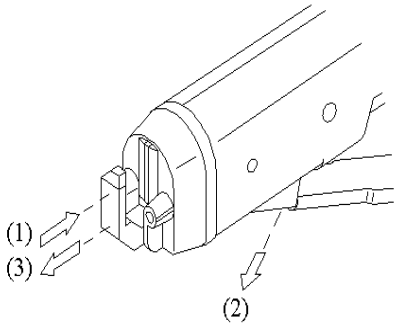
To take off, push both sides.



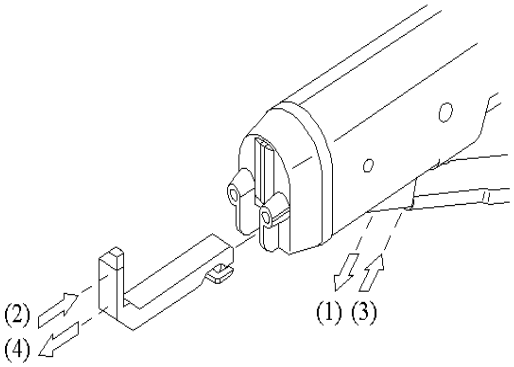
To put on, just push in.



<u>How to disassemble and reassemble the clamp</u>



To remove the clamp;
(1) Push in.
(2) Pull down.
(3) Release it.



To install the clamp;
(1) Pull down.
(2) Push in.
(3) Push up.
(4) Release it.

Cleaning procedure

(1) Turn the power switch off.
(2) Remove the RF cable from the units.
(3) Remove the head protector.
(4) Remove the clamp.
(5) Clean the clamp, the head protector and sealing head area thoroughly. If you have used water, detergent or decontamination liquid, wait a few minutes to allow for thorough drying.
(6) Assemble the clamp and the head protector.
(7) Connect the RF cable between units.
(8) Turn the power switch on and test the machine.

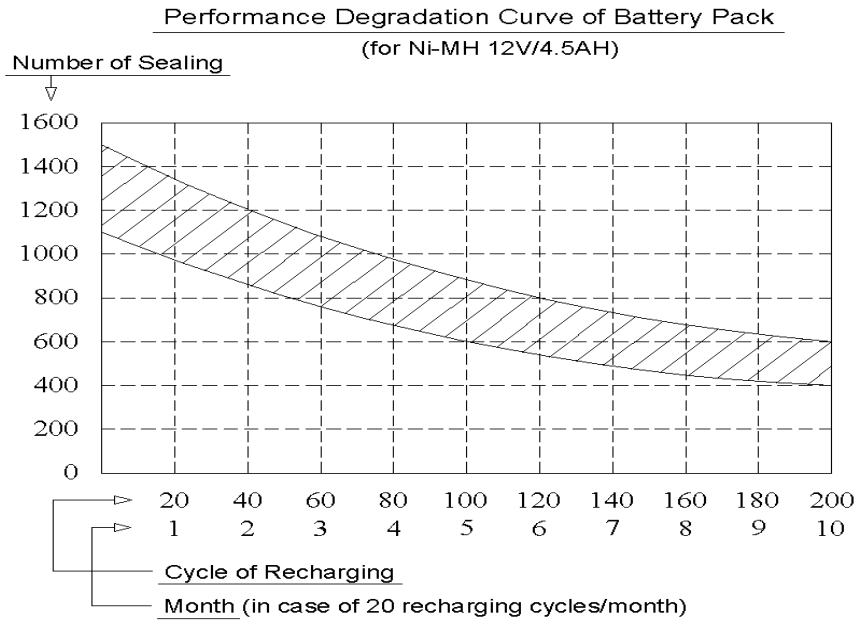
5-3. Replacing the Battery Pack

Characteristics of the Battery Pack

SE700 is powered by a battery pack BN123A. It is a rechargeable battery specified as "12V/4.5AH Ni-MH", which is the most powerful energy storage cell available today.

All rechargeable batteries wear out, so battery pack is a kind of consumables. Charge capacity of a battery diminishes gradually with discharging and recharging. Moreover at tube sealers, as the machines draw exceptionally high amount of battery current during sealing, battery degradation rate is higher than any other battery-using devices.

Refer to the chart below;



The chart shows a performance degradation tendency of Ni-MH 12V/4.5AH battery packs. The reason why it shows quite wide shaded area is that the Number of Sealing varies with many factors, such as;

1) Material and diameter of tubing
2) Room temperature, tubing temperature, and temperature of the sealing head
3) Number of discharging/recharging cycles at the battery pack.

The chart data were made on the following condition;

1) PVC tubing of diameter 4.4 mm
2) Room temperature at 23 ^{o}C
3) Packs recharged 20 times per month.

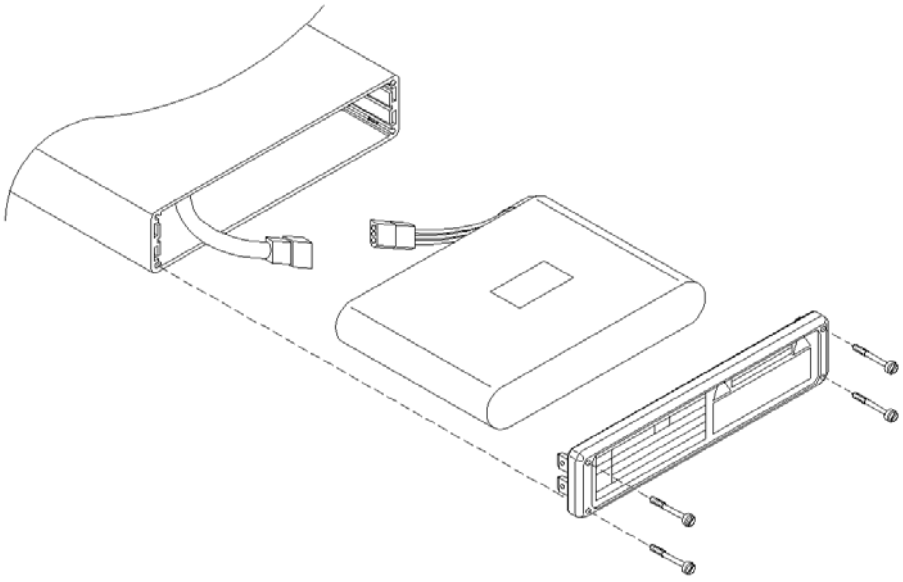
What the chart indicates are;

1) With a new battery pack, approximately 1100-1500 seals could be made.
2) In 6-7 months, the number decreases down to almost half.
   (Assuming recharging is done once everyday, 5 times a week, 20 times a month.)

<u>When to replace the battery</u>

Refer to Section 4-2.

<u>How to replace the battery pack</u>



(1) Prepare a flat-tip screwdriver or a similar tool.
(2) On the rear panel, remove the 4 screws to take off the rear panel assembly.
(3) Take out the battery pack, and pull out to disconnect the battery connector.
(4) Replace it with a new pack, and connect the battery connector.
(5) Carefully push the pack into the housing.
Be careful the wire harness and connector don't twist or jam in the housing.
(6) Assemble the rear panel assembly with the 4 screws.
(5) Recharge the new pack. It may take 6 hours. Refer to Section 4-2.

* *Disregard* BATTERY *lamp indication during the first charging. Indication may be incorrect till charging ends. Stop charging when the* CHARGING *lamp flashes.*

5-4. Service Call

If the machine doesn't operate properly, or if you need any assistance or spare parts, contact your distributor: